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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/780,384	02/17/2004	Francis Lau	GTI-1519	1625

33058 7590 02/04/2008  
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EXAMINER
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MERKLING, MATTHEW J

ART UNIT	PAPER NUMBER
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1795

MAIL DATE	DELIVERY MODE
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02/04/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/780,384

Applicant(s)

LAU ET AL.

Examiner

Matthew J. Merkling

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3,4,6-13 and 24-29 is/are pending in the application.
- 4a) Of the above claim(s) 24-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,4 and 6-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/ are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/21/07 has been entered.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 6 and 8-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Weirich et al. (US 4,713,234).

Regarding claim 1, Weirich discloses an apparatus comprising:

a carbonaceous material reactor vessel (see Fig. 4) having at least one wall enclosing a reaction space having a reaction zone (15) containing a solid carbonaceous material (coal, col. 7 lines 3-10) and having a product gas zone (2) containing reaction product gas (hydrogen, col. 7 lines 3-10) said at least one

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wall forming a carbonaceous material inlet (coal is delivered through conduit 17), an hydrogen-rich gas outlet (11), and a retentate gas outlet (18); and

at least one permeable hydrogen-selective membrane (3) disposed within said reaction space and having a first side in contact with said reaction product gas and an opposite second side in contact with an hydrogen-rich gas (see Fig. 4).

Regarding claims 6, 10 and 11, Weirich further discloses said hydrogen-selective membrane comprises a membrane material consisting of multiple materials, including palladium (col. 6 line 1).

Regarding claims 8 and 9, Weirich further discloses said at least one permeable hydrogen-selective membrane is disposed within a membrane module in a tubular form (see Fig. 5 where module 3 comprises the hydrogen-selective membrane).

Regarding claim 12, Weirich further discloses a solid particle impermeable, gas permeable protective sheath (fabric support, col. 6 lines 42-53).

Regarding claim 13, Weirich further discloses said gasification reactor is a fluidized bed gasification reactor (see Figs. 4 and 5 where Weirich illustrates the gasification reactor in the form of a fluidized bed reactor with a gaseous inlet, 16 located below the solid material inlet 17).

#### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 3, 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weirich et al. (US 4,713,234) as applied to claim 1 above and further in view of Edlund (US 5,139,541).

Regarding claims 3, 4 and 7, Weirich, as set forth in claim 1 above, discloses the use of a metallic foil made from palladium in high temperature reaction conditions (col. 4 lines 7-16). However, Weirich fails to disclose the use of a ceramic material with the claimed formula that is electron and proton conductive.

Edlund also discloses a hydrogen-selective membrane that is utilized in hydrogen purification involving hydrogen production under elevated temperatures (greater than 500C, col. 3 lines 20-29).

Edlund teaches that palladium membranes are associated with a prohibitively high cost (col. 1 lines 13-20). Furthermore, Edlund teaches a more economically feasible membrane composition such as palladium coated SrCe<sub>0.1</sub>-

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$x)Yb_xO_z$  (col. 2 lines 20-35) that accomplishes the hydrogen separation at a lower cost.

It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the palladium foil of Weirich with the membrane composition of Edlund to reduce production costs of the apparatus while still maintaining acceptable hydrogen permeability.

### ***Response to Arguments***

7. Applicant's arguments filed 12/21/07 have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., that palladium is not a component of the permeable hydrogen selective membrane) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In other words, Applicant argues that Edlund teaches a palladium coating on the perovskite structure and is therefore not applicable to the claimed composition that does not include palladium. The examiner respectfully disagrees. Applicant claims a ceramic perovskite oxide is comprised in the hydrogen-selective membrane, but does not exclude palladium being coated on said perovskite membrane, as is disclosed by Edlund (see col. 2 lines 13-35).

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8. Applicant presented other arguments which are moot in view of the new grounds of rejection necessitated by amendment.

### **Conclusion**


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J. Merkling whose telephone number is (571) 272-9813. The examiner can normally be reached on M-F 8:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



MJM



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